

OBJECTIVES

Shipboard Research:

1. Conduct a survey in the AMLR study area during Legs I and II to map meso-scale features of the dispersion of krill, water mass structure, phytoplankton biomass and productivity, and zooplankton constituents using the R/V *Yuzhmorgeologiya*.
2. Estimate abundance and dispersion of krill and krill larvae in the AMLR study area.
3. Calibrate the shipboard acoustic system in Admiralty Bay, King George Island near the beginning of Leg I, and again at Admiralty Bay near the end of Leg II.
4. Conduct bottom trawls at selected sites in the area around the South Shetland Islands to provide baseline estimates of abundance, species size and composition and demographic structure of finfish species.
5. Collect continuous measurements of the research ship's position, water depth, sea surface temperature, salinity, turbidity, fluorescence, air temperature, barometric pressure, relative humidity, and wind speed and direction.
6. Provide logistical support to two land-based field sites: Cape Shirreff (Livingston Island), and Copacabana field camp (Admiralty Bay, King George Island).

Land-based Research:

Cape Shirreff

1. Estimate chinstrap and gentoo penguin breeding population size.
2. Band 1000 chinstrap and 200 gentoo penguin chicks for future demographic studies.
3. Record at sea foraging locations for chinstrap penguins during their chick-rearing period using ARGOS satellite-linked transmitters, Platform Terminal Transmitters (PTTs).
4. Determine chinstrap and gentoo penguin breeding success.
5. Determine chinstrap and gentoo penguin chick weights at fledging.
6. Determine chinstrap and gentoo penguin diet composition, meal size, and krill length/frequency distributions via stomach lavage.
7. Determine chinstrap and gentoo penguin breeding chronologies.
8. Deploy time-depth recorders (TDRs) on chinstrap and gentoo penguins during chick rearing for diving studies.
9. Collect data on foraging locations (using PTTs) and foraging depths (using TDRs) of chinstrap penguins.
10. Deploy PTTs on chinstrap penguins following adult molt to determine migration routes and winter foraging areas in the Scotia Sea region.
11. Document Antarctic fur seal pup production for Cape Shirreff and assist Chilean colleagues with censuses of fur seal pups for the entire Cape and the San Telmo Islands.